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C-A OPERATIONS PROCEDURES MANUAL

9.5.4 Radiation Work Permit

Text Pages 2 through 7

Hand Processed Changes

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Approved: _____ ***Signature on File*** _____
Collider-Accelerator Department Chairman Date

P.Cirnigliaro

9.5.4 Radiation Work Permit

1. Purpose

The Radiation Work Permit (RWP) is an administrative mechanism used to establish radiological controls for intended work activities. The RWP informs workers of area radiological conditions and entry requirements. The RWP provides a mechanism to relate worker exposure to specific work activities. Two types of RWPs are covered in this procedure:

- Job-Specific RWPs,
- General RWPs.

1.1 Definitions

- 1.1.1 General Radiation Work Permit: establishes radiological controls for routine, repetitive activities such as tours, inspections, work in small labs/bench-top research, and conduct of radiological surveys for job specific RWPs where the radiological conditions are well characterized and stable. The duration of this RWP is not to exceed one year.
- 1.1.2 Job-Specific Radiation Work Permit: establishes radiological controls for non-routine or non-repetitive operations in areas with changing radiological conditions, and for all work in High Radiation Areas, Very High Radiation Areas, or Airborne Radiation Areas. The operation has a limited duration with a specific start and stop date. Use of Job-Specific Radiation Work Permits requires the completion of the C-A RWP Access Control Log ([C-A-OPM 9.5.11.a](#)) prior to entry into these areas.
- 1.1.3 Inspection Radiation Work Permits are permits that allow for inspections and low-hazard, skill-of-the-craft work, in radiological areas.
- 1.1.4 Radiological Control Coordinator (RCC) (ALARA Coordinator): a designated person in each Division of the C-A who is responsible for assisting the job supervisor with the administration of the Job-Specific RWP, pre-job review, implementation of RWP requirements, and post job review.

2. Responsibilities

- 2.1 All C-A personnel who enter or work in radiological areas are responsible for following this procedure.
- 2.2 The first-line supervisor or qualified job-planner (see [C-A-OPM 2.28](#)) assigned to the job is responsible for initiating and implementing the Job-Specific RWP.

- 2.3 The appropriate Radiological Control Coordinator (RCC) and the Facility Support Representative (FS) must review, sign and authorize the Job-Specific RWP before work may start.
- 2.3.1 IF the authorized Radiological Control Coordinator is unavailable, THEN the Facility Manager (see [C-A-OPM 10.1.a](#)) may designate an alternate Radiological Control Coordinator.
- 2.4 The FS Representative must also conduct a post job review, as required by [FS-SOP-4031](#).
- 2.5 The job supervisor is responsible for ensuring that the requirements of the RWPs are followed by the work crew.
- 2.6 The C-A ESHQ Division Head shall administer the Department's Inspection RWPs.
- 2.7 The FS Representative shall retain original copies of all completed RWPs.
- 2.8 The Radiological Control Coordinators shall retain copies of all completed RWPs.
- 2.9 Radiological Control Technicians (RCTs) are responsible for conducting pre-job radiological surveys in accordance with appropriate written procedures.

3. **Prerequisites**

- 3.1 Personnel working under a RWP must complete any training, wear protective clothing, wear dosimeters, and must sign and understand the provisions stated in the RWP prior to commencing the work.

4. **Precautions**

- 4.1 No Controls shall be instituted in a radiological area that would prevent rapid evacuation of Personnel.

5. **Procedure**

Note 1:

Radiological designation for specific C-A areas is given in [C-A-OPM-ATT-9.5.4.a](#). Copies of Inspection RWPs for entry into CA radiological areas can be found at:

[Http://www.rhichome.bnl.gov/AGS/Accel/SND/rwp/rad_work_permits.html](http://www.rhichome.bnl.gov/AGS/Accel/SND/rwp/rad_work_permits.html)
Copies of these Inspection RWPs are posted at convenient locations by the C-A ESHQ Division Head.

Note 2:

Job-Specific RWP are issued by the RCC and the FS Representative. A blank Job-Specific RWP (form FS-SOP-4031) can be found at:

<http://www.rhichome.bnl.gov/AGS/Accel/SND/rwp/blankforms.html>

Note 3:

The term Systems Specialist refers to personnel trained to be familiar with the detailed specifications and trouble shooting procedures for equipment under their purview.

- 5.1 All qualified radiation workers, and escorted individuals, shall FOLLOW the requirements of the applicable RWP upon entering radiological areas at the C-A Complex.

- 5.1.1 All qualified radiation workers shall wear digital dosimeters when working in High Radiation Areas at C-A. Any dose received during the day shall be recorded by C-A Personnel on the SRD portion of the C-A RWP Access Control Log. The Log must be completed once for each job, or once each day for multi-day jobs.

Note 4:

Steps 5.2 through 5.5 are illustrated in tables in Step 5.10.

- 5.2 The supervisor and appropriate RCC SHALL USE a Job-Specific RWP for all work in posted High Radiation Areas, or whenever the estimated collective dose equivalent is 200 person mrem or greater, or individual estimated dose is 20 mrem or greater, for the job performed.
- 5.3 The supervisor or job planner shall be aware of the following Collider-Accelerator Administrative Control Levels (ACLs) when planning radiological work:

**C-A ADMINISTRATIVE LEVELS FOR
TRAINED RADIATION WORKERS**

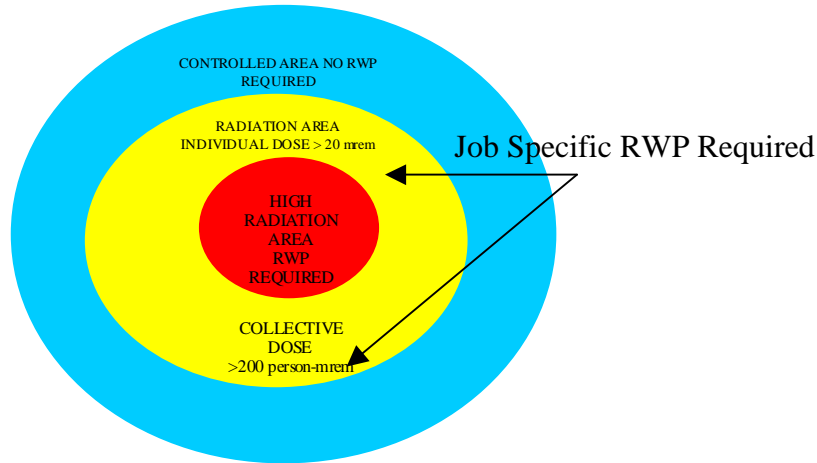
<i>Period of Interest</i>	<i>Maximum Individual Dose Limit, mrem</i>	<i>Individual Dose Limit With Line Authority Approvals, mrem</i>
Calendar Year	1000	1000 to 1250 (C-A Chair Approval)
Day	100	1250 to 2000 (Lab Director Approval), and Radcon Manager
Lifetime	N rem Where N Is Age of Person in Years	100 to 200 (Approval authority will be on the RWP) Laboratory Director Approval To Exceed N rem

- 5.3.1 The supervisor and appropriate RCC SHALL bear in mind that some BNL allocated workers at C-A have different Administrative Control Levels; for example, Plant Engineering staff have an ACL of Less than 500 mrem.

- 5.4 The supervisor and appropriate RCC SHALL USE a Job-Specific RWP whenever dispersible radioactive materials exceed the trigger levels of reference 7.1.
- 5.5 NO JOB-SPECIFIC RADIATION WORK PERMIT IS REQUIRED for work in posted Radiation Area IF the estimated collective dose equivalent is less than 200 person-mrem AND the estimated individual dose is less than 20 mrem AND the individual has a high level of proficiency for the task; that is, the individual has been identified as Systems Specialist. In this case, a general RWP may be used.
- 5.6 PRIOR to the job, the appropriate job supervisor, RCC and FS Representative shall meet to discuss the items indicated in the Job-Specific RWP.
- 5.7 AFTER the job, a review by the FS Representative is required for Job-Specific RWPs in accordance with [FS-SOP-4031](#).
- 5.7.1 When appropriate; for example, following a near miss or an unusual occurrence, the FS Representative shall interview and factor in comments of one or two highest-dose persons on the job.
- 5.7.2 The FS Representative shall maintain post-job review comments in accordance with [FS-SOP-4031](#).
- 5.8 RWP numbers for Job-Specific RWPs shall be assigned by the RCCs as follows:
- RWP 100 to 499 for Accelerator Division
- RWP 500 to 999 for ES&F Division
- 5.9 The RCC shall maintain a log of all completed Radiation Work Permits issued.
- 5.10 Summary of RWP Triggers

AREA DESIGNATION	DOSE	REQUIREMENT
RADIATON AREA	COLLECTIVE DOSE >200 person mrem INDIVIDUAL DOSE > 20 mrem	JOB-SPECIFIC RWP
RADIATION AREA	COLLECTIVE DOSE < 200 person mrem INDIVIDUAL DOSE < 20 mrem	GENERAL RWP
HIGH RADIATION AREA	>0	JOB-SPECIFIC RWP

Job Specific RWP Triggers
Based on Radiological Area and Expected Dose



- 5.11 Job-specific RWPs may be extended in time by the FS Representative, or designee, after a review of the job tasks. The modification shall be noted on the RWP, and the justification noted in the FS Representative Logbook.
- 5.12 It is recommended, but not mandatory, that jobs in radiation fields that are greater than 1 R/h be continuously covered by RCTs. For jobs without continuous coverage, workers must have a survey meter or dose rate indicating device in the work area.

6. Documentation

- 6.1 Radiological surveys shall be performed by Radiological Control Technician using standard forms. Each survey shall contain an appropriate number of survey points to allow for a proper estimate of collective dose. These surveys shall be attached to the Job-Specific RWP.
- 6.2 At C-A, all Job Specific and General RWPs records shall be maintained by the FS Representative.
- 6.3 The RCC shall forward the original completed RWP to the FS Representative.
- 6.4 The FS Representative shall maintain post-job review comments in accordance with [FS-SOP-4031](#).
- 6.5 Copies of RWPs shall be maintained by the RCC.

7. **References**

- 7.1 [FS-SOP-4031, Radiological Work Permit](#)
- 7.2 [C-A-OPM-ATT 9.5.11.a "C-A RWP Access Control Log".](#)

8. **Attachments**

- 8.1 [C-A-OPM-ATT-9.5.4.a](#), “AGS, Booster, Linac, Tandem, and TTB Radiological Area Designations”.
- 8.2 [C-A-OPM-ATT-9.5.4.e](#), “[Summary of C-A ALARA Practices](#)”.